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USSR Report

ENERGY

No. 63

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DETAILS PROVIDED ON POWER-PLANT CONSTRUCTION IN AZERBAIJAN

Baku VYSHKA in Russian 8 Mar 81 p 2

[Excerpts from article by R. Gamigov, manager of the "Azenergostroy" trust: "To Work Economically and Efficiently"]

[Excerpts] The settlement of Kura--the nucleus of the future city--is now being erected alongside the hydroelectric station construction site. The settlement's appearance is composed of nine five-story homes with well-organized apartments, a high school and music school, a kindergarten and day nursery, dormitories, cafeterias, a club, training center, clinic, automated bakery and a bath house.

The settlement will also grow rapidly in the future. There is a reliable industrial base for this--a housing-construction combine built by the Azerbaijan GRES collective in Mingechaur. It supplies reinforced-concrete structural sections for the builders of homes and social and culture buildings in the second Mingechaur microregion and the settlement of Kura.

In the Mingechaur settlement of hydraulic engineers, more than 47,000 m^2 of living area, a school, kindergarten and day nursery and cafeteria have already been put into operation. A trade center is presently under construction. Thanks to the timely creation of good housing conditions, we have managed to meet the flow of personnel. The very stability of the working collectives aids in increasing the pace of the work.

For a long time the GRES construction workers lagged behind. This situation, however, has since been straightened out. Of the 46 million rubles allocated for the construction start, 32 million rubles has been utilized. The most successful year was 1980, when 9.8 million rubles were utilized. Things went particularly well for us when the work groups began to be transported to work in accordance with contractors' agreements. In the final tally, labor productivity rose 36 percent in one year. Labor expenses for one million units of construction and installation work were reduced by 41,000 man-days.

The use of machinery--motor vehicles, excavators, bulldozers and cranes--has also improved. I should say that up until this time they were used in three shifts. Since the first of March all participants in the GRES construction have switched over to round-the-clock operation on a sliding schedule. This is how the builders responded to the resolutions of the 26th CPSU Congress. The collective was obliged to commission the first 300,000-kW power unit and a 1,000 t/h boiler a month ahead of schedule.

The organizations enlisted in this work, "Armgidroenergostroy" and "Gruzgidroenergostroy", are working at the same pace.

We have already spoken of the transition to a four-shift operation. We are also introducing progressive construction technology with the use of the achievements of science and technology. Our specialists, together with the Central Asian "Teploelektroproyekt" institute, took into account the high level of ground water and its aggressive nature. They then developed and introduced a method of constructing so-called shallow-depth foundations. This had a great economic impact.

The economic structure must be economical--such was the task of the 26th CPSU Congress. In our commitments for the current year it says: save 300 tons of cement. The first step has been taken in reaching this goal: a special compound--fermented sulfate mash--is being added to the concrete mixture. Polyethylene shafts are being used instead of steel shafts. According to calculations, the yearly savings will amount to not less than 800 tons.

We have begun extensive mechanization of operations such as the construction of roofing, finishing work, etc. We plan to reduce heavy physical labor on other operations as well.

Together with the Georgian branch of the "Orgenergostroy" Institute and with other participants in the construction of the GRES, the trust has developed a construction schedule. The course of its completion is being monitored. A headquarters run by the deputy chief of the central board of the "Glavgidroenergostroy" ministry has been created on-site. Its staff includes managers from "Azglavenergo", "Azenergostroy", the Mingechaur city Soviet and contract organizations. The headquarters meets once a month and coordinates the activities of the participants in the republic's most important construction project.

We are employing all our energies toward the completion of this initial construction program ahead of schedule and with a high degree of quality. In this undertaking we are all inspired by the historic resolutions of the 26th CPSU Congress and the majestic program of work for the Soviet people in the 11th Five-Year Plan.

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PLANS FOR ELECTRIC POWER DEVELOPMENT REVIEWED

Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2

[Review: "The Development of Electric Power"]

[Text] Lenin's behests for electrification are systematically being realized in the USSR. In the years of the 10th Five-Year Plan this most important sector of the economy was elevated to a higher level. An enormous power potential was created in the country.

The installed capacity of electric power stations has exceeded 267 million kW. More than 54 million kW of new electric power output have been commissioned at these stations. The generation of electric power in 1980 increased by 24.6 percent in comparison with 1975, increasing by a factor of 3.6 at atomic electric power stations and by a factor of 1.5 at hydroelectric stations.

The extent to which workers' jobs in industry have been electrified has risen by 12.1 percent in the last five years, while for kolkhoz and sovkhoz workers the extent of electrification has increased by a factor of 1.6. The consumption of electric power for the municipal service needs of the workers has increased by almost a third.

Power engineering in the USSR occupies a leading position in the world with respect to such important indicators of technical progress as individual power unit output, the voltage level in electric networks, the unit consumption of fuel and the scale of district heating.

In the 10th Five-Year Plan, electric power systems will be fitted out with high-efficiency turbines and boiler units, powerful atomic reactors and modern electrical equipment on an even greater scale. New power units have been commissioned at four AES's. Modern power units have been put into operation at a number of hydroelectric stations. Construction has been completed on the Reftinskaya, Zaporozhskaya and Uglegorsk GRES's, the most powerful in Europe.

The construction of electric-power networks has been accomplished along a broad front. During the years of the five-year plan, about 160,000 km of new electric transmission lines of 35-kW capacity and greater have been put into operation. Siberia's interconnected power system has been joined to the Unified Power System.

In solving the problems of the dynamic development of the Soviet economy in the 11th Five-Year Plan, the role of power engineering is growing ever greater. In his report to the 26th CPSU Congress, Comrade L. I. Brezhnev set a task to improve the structure of the fuel and power balance, develop atomic power engineering quickly and reduce the share of oil as a fuel and replace it with gas and coal.

A specific program for the further increase of our power potential is contained in the Basic Directions approved by the congress. It is envisaged that the generation of electric power in 1985 will be brought up to 1.55 billion kWh.

Atomic Power

One of the major features of the 11th Five-Year Plan is the realization of a broad program of progressive trends in electric power engineering. First among these is the primary development of atomic power engineering in the country's European sector. It is planned that 24-25 million kW of capacity be commissioned here at AES's over five years.

Along with the further development of existing AES's, new stations will be built, including the Zaporozhskaya, Rostov, Ignalinskaya, Balakovo, Southern Ukraine, Smolensk, Khmel'nik, Kalinino and others. They will be fitted out with high-efficiency power units with water-moderated power reactors of million-kW capacity and high-power channel-type reactors from one to one and a half million kW.

Today the "Gidroproyekt" and "Teploelektroproyekt" institutes are completing the development of standardized AES designs in which progressive technical solutions are envisaged in their construction and operation. The Zaporozhskaya AES with its 4 million-kW output is presently being built at an accelerated pace using this standardized design.

An essentially new direction in centralized heat-supply to large cities is the utilization of nuclear fuel toward this end. During the current five-year plan, construction will be carried out at heat-supplying atomic stations in Gor'kiy and Voronezh, with atomic heat-and-power plants being built in Odessa, Minsk, Khar'kov and Volgograd. The high-efficiency of atomic heat-and-power plants is borne out by the fact that the construction of such a plant in Odessa will make it possible to reduce the annual consumption of fuel oil by 2 million tons, close down about 500 uneconomical boiler plants and considerably reduce environmental pollution.

The operation of atomic electric power stations will subsequently be improved. The cost of electric power production at these stations today is comparable to the same indicator at thermal stations. At the Novovoronezhskaya AES, in fact, it is lower than at a GRES. Owing to the production of electric power at AES's, approximately 250 million tons of conventional fuel were saved for the economy in the 10th Five-Year Plan.

Hydroelectric Stations

An extensive program for the construction of large-scale hydroelectric stations on the rivers of Siberia, the Far East, Central Asia and other regions was established by the resolutions of the 26th CPSU Congress. This program is based on the integrated utilization of hydraulic resources as well as hydroaccumulating electric power stations in the country's European sector. In all, new capacities on a scale of 12.3 million kW are planned for introduction during the five-year plan at GES's and GAES's.

Construction will basically be completed on the Sayano-Shushanskaya and Mayn GES's. The first power unit at the Kureyka GES and the construction of the Boguchanskaya GES will be expanded. The construction of the Kolyma GES-1 in the Far East should be completed and the first hydroelectric generating set of the Bureya GES will be put into operation. In Central Asia and Kazakhstan, the Kurpsayskaya GES will go on full power, the first hydroelectric generating sets at the Tash-Kumyr and Shul'binskaya GES's will be put into operation and construction will get under way at the Rogunskaya and Baypazinskaya GES's.

In the European sector of the USSR, plans are being made to commission new capacities at the Cheboksary, Nizhnekamsk and Dnestr GES's and at the Zagorsk and Kayshlyadoris hydroaccumulating electric power stations. Hydroelectric construction will be developed further in the North Caucasus and Transcaucasus regions. Plans have been made to introduce new capacities at the Shamkhor, Miatlinskaya, Zaromagskaya, Zelenchukskaya and other hydroelectric stations.

Structure of Electric Power Production (in percent)

Type of Electric Power Station	1975	1980	1985 (planned)
Thermal	85.9	80.2	71
Hydraulic	12.1	14.2	14.8
Atomic	2	5.6	14.2

Thermal Electric Power Stations

A considerable portion of the newly commissioned thermal electric power stations will operate on cheap coal from open-pit mines in the eastern sector of the country as well as on casing-head gas from Tyumenskaya Oblast.

Four electric power stations with a combined output of 16 million kW will be constructed in the Ekibastuz GRES-1, where three power generating sets of 500,000-kW capacity each have been put into operation; three more units of the same output should be commissioned this year.

An orderly system for the accelerated continuous construction of electric power stations in the Ekibastuz fuel and power complex has been developed and introduced by design, construction and installation organizations of the USSR Ministry of Energy.

A significant role in furnishing the national economy with fuel and electric power, particularly in the eastern regions, is being assigned to the Kansko-Achinsk complex.

The largest thermal electric power stations with outputs of 6.4 million kW each are being designed based on the use of cheap coal as fuel.

The first GES complex--the Berezovskaya GES, at which power generating sets of 800,000-kW capacity will be installed--is now under construction. Its capacities are planned for introduction during the 11th Five-Year Plan.

Large-scale electric power stations operating on local natural and casing-head gas will appear on the map of Tyumenskaya Oblast. In 1980 the output of the Surgut GES-1 reached 2.54 million kW. This year the next power-generating set with a capacity of 210,000 kW will be commissioned at this station. The construction of a second electric power station is under way. In the near future construction will begin on the third Surgut and the Urengoy GRES's.

The construction and introduction of new capacities will be continued at a number of large-scale, high-efficiency electric power stations in the European sector and other regions of the country. Among them are the Ryazan', Stavropol', Azerbaijan, Zuyevka, Perm', Primorskaya, Kharanorskaya, Angren, Mary and other GRES's.

Central heating supply will be developed further. Modern power generating sets with capacities of up to 250,000 kW and high-efficiency water-heating and steam boiler plants will be used to equip TETs's.

Electric Transmission Line Construction

The construction of electric networks will be elevated to a qualitatively new and higher level. This construction will be characterized by the erection of extreme long-distance electric transmission lines of a new voltage class and an increase in the density of 750-kV transmission lines.

The first phase of a 2,400-km, 1,500-kV direct-current main line from Ekibastuz to the country's center is planned for commissioning during the years of the five-year plan. In the future, up to 42 billion kWh of cheap electric power annually will travel to the country's European sector along this line. The construction of the 1,150-kV Ekibastuz-Urals alternating-current transmission line will make it possible to direct about 5 million kWh of electric output into the Urals' electric power system.

The transmission of electric power generated by atomic and large-scale thermal electric power stations will be effected along 750-kV transmission lines including the Khmel'nik AES-Poland and the Southern Ukraine AES-Romania-Bulgaria lines. The construction of 500-kV lines is also planned for the development of intersystem coupling. Among them are the Inguri GES-Stavropol', Ekibastuz-Omsk, Svobodnyy-Khabarovsk, Primorskaya GRES-Vladivostok and other lines.

Great volumes of work remain to be done on the construction of rural electric networks and substations for the electrification of kolkhozes and sovkhozes and for connecting them to State power systems of new livestock complexes, poultry plants and other installations.

During the current five-year plan, the interconnected power systems of Central Asia and the Far East as well as individual power centers in the northern regions of the USSR's European sector and Western Siberia will be connected to the country's Unified Power System.

In the further improvement of the fuel and power balance, an even greater role will be assigned to renewable power sources: solar, geothermal, wind, etc.

Managing the Economy

The fulfillment of the resolutions of the 26th CPSU Congress regarding the development of power engineering and the electrification of the country is linked to the realization of a growing volume of construction projects, the concentration of forces and means on the most important projects, a limitation on the number of installations simultaneously under construction and the steady introduction of new capacities over the course of the year. It is also necessary that the number of uncompleted construction projects and the inventory of uninstalled equipment be reduced to established standards.

The Basic Directions set a task to increase the reliability of the electric power supply to the national economy and to reduce the consumption of fuel and the costs of electric and thermal power. It will be necessary, first of all, to improve the utilization of the output from electric power stations.

In the past year, the USSR Ministry of Energy did not cope with the task of reducing the unit consumption of fuel per generated kilowatthour. There are many electric power stations that have achieved good results in fuel economy. Among them are the Kostroma, Reftinskaya and Zaporozhskaya GRES's. Their progressive experience, however, is still poorly disseminated.

A considerable reserve is the reduction of electric power losses in the networks.

There are still many industrial enterprises and organizations where waste in the expenditure of fuel and power reserves is tolerated.

In an atmosphere of heightened labor and political activity, socialist competition has turned to the successful completion of the tasks of 1981. The collectives of the Reftinskaya and Surgut GRES's and the "Naryngidroenergostroy" trust have come forth as pioneers. They have made the commitment to achieve high final results.

The USSR Ministry of Energy has successfully completed its tasks for January and February with regard to the realization of industrial output and the production of electric and thermal power. The two-month plan for contract operations has been exceeded.

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LACK OF MANAGEMENT SEEN AT SAYANSK TERRITORIAL PRODUCTION COMPLEX

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Feb 81 p 2

[Article by K. Yegorov, manager of the construction department of the Khakasskiy CPSU obkom: "The Complex Needs a Boss"]

[Text] People throughout the country are well acquainted with the power heart of the Sayansk territorial production complex--the Sayano-Shushenskaya GES. They take films of it and write poems about it. Another very important installation in the complex, an aluminum plant, is being erected a few dozen kilometers from the hydroelectric station, but little is written or spoken about it. The fact of the matter is that, although five of the ten power units at the GES are already generating electricity, the first of the machines at the aluminum plant will not soon begin operation.

The creation of the Sayansk complex was foreordained by the cheap and abundant hydroelectric resources and the developed power engineering, which should insure the efficient development of electric-intensive industries with relatively small outlays. Because of the simultaneous construction and utilization of the capacities introduced, preliminary calculations lead us to expect an economic effect of approximately 15 percent of the estimated cost of all enterprises in the complex. A very important argument in favor of the creation of the territorial production complex has been the fact that the majority of enterprises had already been combined into industrial centers. It was but a stone's throw, as they considered it, from industrial center to complex.

We in the Krasnoyarsk kray have accumulated much experience in the consolidation of equipment, materiel and labor resources in industrial centers, when about half of all capital investment is utilized. Industrial centers have made it possible to reduce the number of subsidiary industries and to organize a unified transportation industry and enlarged repair services. The Sayansk complex includes four industrial centers: the Abakan, Chernogorsk, Sayanogorskiy and Minusinsk centers as well as enterprises located beyond their boundaries. In all, it has been proposed that about 100 industries be constructed or rebuilt within the limits of the complex.

The Abakan industrial center is developing well. Here now, for example, the construction of the "Abakanvagonmash" association's TETs is proceeding at an accelerated pace. This TETs will supply heat not only to the plants of the association, but also to enterprises in the industrial center of Khakaiya. The commissioning of this TETs will make it possible to close down about 100 small-scale boiler plants. The economic impact from the commissioning of the facility will amount to about six million rubles annually.

One can cite other similar examples. The complex as a whole, however, does not present such a satisfactory picture. For example, 35 large-scale installations in the Sayansk territorial production complex were called for to be erected in the Khakasiya territory in 1971-1980, but only 18 are producing. Work has not begun at all on the construction of the Izykhskiy brick plant (ordered by the RSFSR Ministry of Construction Materials), a lumber plant (Ministry of Heavy Construction) and a baker's and confectioner's combine in Abakan (RSFSR Ministry of the Foodstuffs Industry). Three years later than was stipulated, the construction of a plant to manufacture asbestos industrial goods was begun in Chernogorsk (USSR Ministry of the Petroleum Equipment Industry). Construction is proceeding slowly on the Sayansk aluminum plant (USSR Ministry of Nonferrous Metallurgy), the Tashebinskiy sand and gravel quarry (RSFSR Ministry of Construction Materials) and others.

Here is only one example of what interruptions in the planned schedules for commissioning installations in the complex can lead to. The Sayansk granite quarry was put into operation four years past the planned schedule, its output proving to be less than the designed output by a factor of three. All this time, the "Sayanmramor" combine, which was to receive the granite from the quarry, purchased it from other areas of the country. This increased the cost of the granite many times over.

In the draft of "Basic Directions" it is stipulated: "Insure the further development of the Sayansk territorial production complex. Primarily, complete the construction of the Sayano-Shushenskaya GES, commission the capacities of the Abakan railcar construction plant and the Sayansk aluminum plant, continue construction on the electrical equipment enterprises in the city of Minusinsk."

While carrying out these tasks, one must seriously ponder over how to improve the efficiency of the complex's development. Its basic advantage is the simultaneous construction of enterprises. Their mutual coordination destroys departmental separation. An industrial center can be small yet still have a general builder as a manager. The territorial production complex, however, has no such manager.

V. I. Lenin warned that "bureaucratic" division, necessary for directing the State, causes harm if one does not work constantly to coordinate actions and eliminate friction, red tape and bureaucratic bottlenecks. There is practically no one to "work constantly to coordinate actions" in the territorial production complex. The complex needs a manager--an organ whose decisions would be obligatory for all participants in the construction of the territorial production complex. I emphasize for all participants, not only those involved in the construction of industrial installations, transportation arteries, housing--the whole infrastructure--is no less important.

In the "Basic Directions" there is a line: "Develop unified economic and legal bases for the interdepartmental management of territorial production complexes." A timely measure!

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BRIEFS

FUEL ECONOMY--An important problem for power engineers is the economical expenditure of fuel and power resources. On a nationwide scale, a one-gram reduction in the amount of fuel needed to generate one kilowatthour of power at a GRES would be equivalent to a savings of more than 800,000 tons of conventional fuel annually. Meanwhile, in 1980, 40 percent of the GRES's have not fully completed their tasks with regard to this indicator. A large reserve can be seen in a reduction of electric power losses in networks. In power systems as a whole, these losses amounted to nine percent in the past year. A one-percent reduction in these losses permits a four-million ton savings of conventional fuel. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

REDUCTION IN FUEL CONSUMPTION--The Reftinskaya GRES with its output of 3.8 million kW is the largest thermal electric power station in our country. Four power generating sets of 500,000-kW capacity each were commissioned here ahead of schedule during the 10th Five-Year Plan. They were all put into operation ahead of the standard timetable. The GRES collective showed an example of how to increase production efficiency and the reliability of equipment operation. The unit expenditure of fuel for the generation of one kilowatthour of electric power when operating on Ekibastuz coal has been reduced by 6.6 grams in comparison with the design indicator. During the last five-year plan, 550,000 tons total of conventional fuel was conserved. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

SAVINGS AT KOSTROMA GRES--The Kostroma GRES has successfully coped with its tasks of the past five-year plan with respect to all technical and economic indicators. In 1980 they achieved the lowest unit consumption of fuel for the generation of electric power among similar power stations. Over the five years 200,000 tons of conventional fuel were conserved. The economic impact from the reduction in the cost of electric power production was equal to 4.7 million rubles. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

LOWEST POWER GENERATION COST--The Chernobyl' AES with its output of two million kW is equipped with high-efficiency power units and million-kW reactors. The station's collective generated 842 million kWh of electric power in excess of the five-year task. The utilization of newly introduced capacities was accelerated and the economical operation of the equipment was improved. As a result, the cost of electric power generation last year was reduced to 0.66 kopecks per kilowatthour.

This is less than at thermal electric power stations and is the best indicator among all similar AES's. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

LARGEST HYDROELECTRIC STATION--Among operating hydroelectric stations in the Soviet Union, the Krasnoyarsk GES is the largest (output of six million kW). Its collective, having completed its five-year plan ahead of schedule on 15 November 1980, provided an additional 2.6 billion kWh of electric power. Owing to an improvement in the operation of the equipment and an increase in its economy of operation, the lowest cost of electric power in the country has been achieved at the Krasnoyarsk GES. Labor productivity has risen 25 percent over the last five years. This has made it possible to free more than 100 of the service personnel and to send them to other establishments. [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

LAGGING BEHIND--The following are not accomplishing their tasks with regard to reducing the unit consumption of fuel per kilowatthour of electric power generation: the Yermak GRES (Pavlodarskaya Oblast); the Gusinoozersk GRES (Buryatskaya ASSR); the Pridneprovsk GRES (Dnepropetrovskaya Oblast); the Yayva GRES (Permskay Oblast). [Text] [Moscow EKONOMICHESKAYA GAZETA in Russian No 12, Mar 81 p 2] 9512

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ROLE OF STANDARDIZATION IN FUEL-ENERGY CONSERVATION DISCUSSED

Moscow STANDARTY I KACHESTVO in Russian No 2, Feb 81 pp 8-10

[Article by G. G. Nemtsev, chief of the Administration of Power and Electrical Equipment Industry, V. I. Plekhanov, chief of the Fuel, Ore and Nonore Minerals Department of the State Committee for Standards, and P. P. Bezrukikh, All-Union Scientific Research Institute of Standardization of Machine Building: "Standardization in the Field of the Economics and Rational Use of the Country's Fuel-Energy Resources"]

[Text] The questions of conservation and rational use of fuel and energy are becoming increasingly important in all the industrially developed countries.

In the countries of the European Economic Community, for example, the implementation of fuel-energy conservation measures will make it possible to reduce their consumption by 19 percent in 1985 and 35 percent in the year 2000. Moreover, they expect to reduce losses during petroleum refining by 27 percent in 1985 and 48 percent in 2000, while cutting losses during the production of electricity by 28.5 percent and 41 percent respectively (the 1975 level of consumption was taken as the base).

In the United States the policy of energy conservation was legally formulated in the Law on Energy Policy and Conservation (1975) and the National Energy Law (1978).

U. S. energy policy outlined the following key areas of activity:

a. improving the energy efficiency of transportation (including a reduction in maximum gasoline consumption for 100 kilometers for all makes of cars from 17 liters in 1977 to 12 liters in 1980 and 8.6 liters in 1985);

b. a gradual transition of power plants and enterprises from liquid to solid and gaseous fuel;

c. improvement in the insulation of residential, commercial, and administrative buildings;

d. development of new energy sources.

In the United States, alongside requirements for energy conservation contained in standards for articles, plans envision labeling new models of motor vehicles and domestic appliances whose fuel and energy consumption does not exceed the established norms.

The Japan Energy Commission worked out a program of energy conservation that provides:

a. more rational use of energy-consuming devices;

b. direct reduction in the use of electricity (for example for lighting);

c. transition to more efficient ways of using energy (in particular, it is recommended that the use of electricity for heating be eliminated);

d. reduction in heat losses by improved heat insulation.

In Japan energy conservation is also being achieved by means of standardization. At the present time the state industrial standards for devices to produce, convert, and consume energy include requirements for conservation. In addition they have certain requirements for measurement techniques, measurement instruments, and control equipment that affect the efficiency of energy use.

Our country is devoting considerable attention to the problem of conservation and rational use of fuel-energy resources. The urgency of this problem has been noted numerous times by General Secretary of the CPSU Central Committee, Chairman of the Presidium of the USSR Supreme Soviet, Comrade L. I. Brezhnev. For example, in his talk at the November 1979 Plenum of the CPSU Central Committee he said: "No matter how rapidly we develop our energy system, conservation of heat and energy will continue to be a very important national challenge." In his talk at the October 1980 Plenum of the CPSU Central Committee Comrade L. I. Brezhnev emphasized: "Our plan should include broad fuel and energy conservation. And I have in mind both that conservation which results from a determined struggle against mismanagement and waste and the conservation related to purposeful technical and capital investment policy."

According to estimates in the technical literature, all possible fuel and energy conservation arises from three sources:

1. Roughly 70 percent comes from the development and use of new, more economical energy-consuming equipment, introduction of less energy-intensive technologies, and wide use of automation and monitoring instruments;

2. About 20 percent can be obtained by improving the heat insulation of buildings, reducing fuel losses during storage and transportation, and reducing losses of electrical and heat energy during its transmission, distribution, and consumption;

3. The remaining 10 percent may come from purely organizational measures.

In the 10th Five-Year Plan 160 million tons of standard fuel was conserved. This figure will be significantly higher in the 11th Five-Year Plan. It must be kept in mind here that expenditures for conservation of fuel-energy resources are just one-half to two-thirds of expenditures for a corresponding growth in the production of such resources, extraction, processing, and transportation.

Following the above-given classification of sources of fuel and energy conservation, the work of the State Committee for Standards is going forward in three areas:

1. Setting standards for energy-generating and fuel- and energy-consuming equipment, establishing indicators and norms for specific expenditure of fuel and energy, and formulating special standards for norms of energy use;

2. establishing technical norms and metrological means of support for planning, accounting for, and monitoring fuel and energy losses in all stages of their production, transportation, and consumption;

3. establishing organizational-methodological standards for fuel and energy conservation.

In conformity with these lines of activity and taking into account foreign experience, the State Committee for Standards worked out the "Program of Technical Norm and Metrological Support for the Important, Integrated, Economic Targc Program 'Raising the Efficiency of Use of Fuel-Energy Resources' (Effektivnost' TER)." The goals of the program are conservation and rational use of fuel-energy resources, reducing fuel and energy losses, and improving the quality of fuel and electricity by formulating technical norm documents and establishing metrological support.

The program contemplates development of the following systems of standards (SS's), norms, rules, and methodologies: "Fuel"; "Energy Production" for the production, transportation, and distribution of electrical and heat energy; "Consumption" for the final consumption of fuel and energy in industrial sectors.

The establishment of technical norm documents and metrological support within the system will make the following possible:

a. to improve quality and reduce losses in the extraction, storage, processing, and transportation of fuel (the SS "Fuel");

b. to improve the quality of electrical energy, reduce losses of electrical and heat energy, reduce the expenditure of standard fuel per kilowatt-hour of electricity and gigacalorie of heat, and monitor the impact of the power industry on the environment (the SS "Energy Production");

c. to reduce losses and cut back irrational use of fuel and energy, maintain the quality of electrical energy at the assigned level, and increase the effectiveness of installations that use secondary energy resources (the SS "Consumption").

The principal directions of work on conservation and rational use of fuel-energy resources are reflected in the structure and content of the program "Effektivnost' TER."

The program has the following 10 sections:

1. system of organizational-methodological standards on conservation and rational use of fuel-energy resources (SS TER);
2. making changes or revisions in standards for machinery and equipment to introduce indicators of energy efficiency (specific expenditure of fuel and energy, specific power consumed);
3. systems of standards for energy-generating and energy-consuming equipment and equipment used to extract and process fuel;
4. metrological support for indicators of energy efficiency established in the standards;
5. standards, norms, methodologies and rules aimed at reducing losses of fuel and energy (accounting, norms, and planning for losses);
6. metrological support of accounting for losses of fuel and energy;
7. standards, norms, and methodologies of accounting for the quantity and quality of energy produced and consumed and fuel extracted and used;
8. metrological support of accounting for the quantity and quality of energy produced and consumed and fuel extracted and used;
9. standards for monitoring environmental pollution by waste products of energy production;

10. metrological support for monitoring environmental pollution.

The content of section one was compiled on the basis of an analysis of existing systems of standards (for example the Uniform System for Technological Preparation of Production) with due regard for the directive methodological documents now in effect ("Basic Principles of Establishing Norms for Expenditure of Fuel, Electricity, and Heat Energy in Production" and others) and considering analysis of existing practices in setting fuel and energy consumption norms.

The TER system of standards and the systems for setting norms and accounting for planning conservation comprise the unified normative basis of the system of conservation and rational use of fuel-energy resources in the country.

Section two was written on the basis of an analysis of existing standards for energy-generating and heat- and electricity-consuming equipment, machinery, and apparatus for the purpose of determining the existence and level of indicators of energy parameters and energy efficiency. The section points out the standards in which such indicators are partially or completely absent.

Section three, in addition to basic energy-generating equipment (boilers, turbines, generators, and transformers) includes fuel- and energy-consuming equipment. A list of this equipment was compiled on the basis of the sub-headings of fuel and energy use in the national energy balance. First the most energy-intensive sectors were identified, and then the most energy-intensive production facilities or types of equipment within them. It was taken into account that the energy-intensiveness of a sector is sometimes the result of either the high energy-intensiveness of unique equipment or facilities or the large number of pieces of equipment in use.

Sections four-eight deal with work to establish technical norm documentation and metrological support aimed at conservation of fuel-energy resources, reducing losses of fuel and energy, and improving accounting for the quantity and quality of energy produced and consumed and fuel extracted and used.

Sections nine and ten are included because all questions of fuel and energy conservation must be solved together with questions of environmental protection. Decontamination structures often greatly increase the cost of projects or increase production costs (energy use). The energy savings must be real, that is, it cannot require enormous expenditures for environmental protection.

The program "Effektivnost' TER" is based on the integrated programs of standardization under development at various ministries and departments. It includes the program "Solid Energy Fuels" whose realization should insure stability of fuel quality for thermal power plants, most rational and economical use of solid fuel, and a reduction in losses during extraction, concentration, transportation, and storage.

The USSR has now built a mighty fuel-energy complex. Solid fuel's share in the country's fuel balance will rise steadily. Whereas about 45 percent of all coal delivered to the national economy was shipped to power plants in 1975, it had already risen to about 47 percent in 1978.

The largest share of all types of coal output delivered to thermal power plants is run coal (about 74 percent), while the remainder are siftings (21.5 percent), intermediate products (3.7 percent), and slag (about one percent). In addition, some 26 million tons of combustible shale is delivered for combustion in pulverized form.

Despite the large volume of extraction of solid fuel, rational and economical use of the product is becoming crucial today. This was emphasized in the decree of the USSR Council of Ministers entitled "Supplying the National Economy and Population with Fuel, Electricity, and Heat Energy in the 1980-1981 Fall-Winter Period."

The draft integrated program "Solid Energy Fuels" contemplates revision and development of 100 technical norm documents (including 57 state and 14 sectorial standards, five technical specifications, and 24 other documents) and development and introduction of new technology and appropriate technical norm documents on dressing coals heavily contaminated by mineral impurities in steeply inclined separators. This will make it possible to reduce losses of coal during extraction and receive an additional 4 million tons of commodity coal a year.

The development of technical norm documents and measures to reduce coal losses during transportation and storage will permit an annual savings of 50 million rubles. The development of apparatus and methods of monitoring the quality of commodity coal and appropriate technical norm documents will permit an annual savings of 5 million rubles. The development and introduction of technical norm documents for standard technological plans for mining work will make it possible to reduce losses during coal extraction.

In view of the large volume of work the program "Effektivnost' TER" is figured for 10 years.

The program contemplates development of the following:

a. a system of standards for machinery, equipment, and technological processes in 59 subject areas including 129 groups of equipment;

b. a system of organizational-methodological standards on conservation and rational use of fuel-energy resources (SS TER), consisting of 21 standards;

c. methodological instructions and other technical norm documentation on 39 topics;

d. metrological hardware for 10 subject areas.

In addition, changes will be made in 413 standards. After review of the sections of the program by the ministries, the number of standards and the technical norm documents planned for development will be refined. There are 42 ministries and departments involved in this work.

As the program is being carried out it will be corrected and refined. Plans for the 11th Five-Year Plan envision producing technical norms documents on the topics for which scientific research has been done. For the other topics scientific research is to be done in the 11th Five-Year Plan with development of technical norm documentation in the 12th Five-Year Plan.

After preliminary discussion at the State Committee for Standards the program will be distributed to interested ministries and departments for responses and reconciliation.

A successful solution to the problem of conservation of fuel-energy resources will depend greatly on the vigorous and constructive position of the ministries and departments involved in development and implementation of the program.

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ENERGY CONSERVATION

CAMPAIGN TO CONSERVE FUEL, LUBRICANTS IN TURKMENISTAN REVIEWED

Ashkhabad SEL'SKOYE KHOZYAYSTVO TURKMENISTANA in Russian No 1, 1981 pp 22-24

[Article by A. Gorbunov, chief of the Turkmen SSR Glavgossel'tekhnadzor: "Store Fuel and Lubricants Carefully and Use Them Economically"]

[Text] The fleet of machines and tractors of republic kolkhozes and sovkhozes has been almost completely renewed in the time that has passed since the March 1965 Plenum of the CPSU Central Committee. In these years the energy capacities of agricultural enterprises rose from 1,771,000 to 4,332,000 horsepower or 2.4 times, and the power-worker ratio at the kolkhozes and sovkhozes is 13.5 horsepower, an increase of 1.8 times.

When agriculture has been supplied with such equipment, the questions of the use, transportation, and storage of fuel and lubricants become paramount.

The following figures graphically confirm the importance of conserving petroleum products. According to very rough calculations, preventing losses of just one percent of petroleum products used in the country's agriculture would make it possible to save 20-30 million rubles a year. A decrease of just one percent in the use of oil would enable the kolkhozes and sovkhozes to save about 2.5 million rubles a year. The loss of only one percent of the grease is about 1,000 tons worth a total of 200,000 rubles.

The campaign against losses of petroleum products is important from both the technical-economic standpoint and the socioeconomic standpoint. Petroleum products lost during the operation of a motor vehicle and during hauling, storage, and refueling do not disappear without a trace; they pollute the environment. They enter the atmosphere, soil, bodies of water, and sources of water and have a harmful effect on plants and animals.

The machine operators and engineering-technical personnel of the kolkhozes, sovkhozes, and agricultural agencies of the republic, carrying out the resolutions of the 25th Congress of our party and the July 1978 Plenum of the CPSU Central Committee on further development of agriculture, have done a good deal to improve the transportation, storage, and use of petroleum products and accounting for them.

In recent years the kolkhozes and sovkhozes have put 26 petroleum storage depots into use. A great deal of work has been done to organize mechanized, enclosed refueling. Steps are being taken to reconstruct and organize repair and technical servicing of the equipment of the petroleum storage depots by a specialized service formed at the rayon Sel'khoztekhnika organization. Work is going forward to eliminate the petroleum storage depots in brigades and concentrate the storage of petroleum products in the central areas of the farms and then have vehicles refueled in the field by traveling refueling trucks.

A republic headquarters made up of specialists from the Turkmen SSR Ministry of Agriculture and the Turkmen SSR State Sel'khoztekhnika Committee has been established to make operational decisions on questions related to the use of fuel and lubricants and technical servicing and repair of petroleum storage equipment at the kolkhozes and sovkhozes.

After careful inspection on a planned basis the operational headquarters is conducting its traveling meetings to review the condition of petroleum storage facilities at the kolkhozes and sovkhozes and is outlining steps to eliminate problems in the use, storage, and transportation of fuel and lubricants. Such meetings were held in 1979-1980 at the Leningrad Kolkhoz in Chardzhouskiy Rayon and the Kolkhoz imeni Chapayev in Leninskiy Rayon of Tashauzskaya Oblast and the Kolkhoz imeni Kuybyshev in Murgabskiy Rayon of Maryyskaya Oblast. The operational headquarters reviewed the question of the condition of petroleum storage facilities at kolkhozes and sovkhozes of Ashkhabadskaya Oblast at its meeting in the Turkmen SSR Ministry of Agriculture.

As a rule, the headquarters invites engineering-technical personnel of the farms, rayon administrations of agriculture, rayon Sel'khoztekhnika organizations, oblast administrations of agriculture, and oblast Sel'khoztekhnika organizations and certain kolkhoz and sovkhoz managers to its meetings.

A considerable amount of work has been done to build the material-technical base at the Sotsializm Kolkhoz in Ashkhabadskiy Rayon, the Kolkhoz imeni Chkalov in Maryyskiy Rayon, the Kolkhoz imeni Kuybyshev and the Kommunist Kolkhoz in Iolotanskaiy Rayon, the Leningrad Kolkhoz and Kolkhoz imeni Khalturin in Chardzhouskiy Rayon, the 40 Let SSSR Kolkhoz in Sayatskiy Rayon, the Kolkhoz imeni Kuybyshev in Sakarskiy Rayon, the 40 Let TSSR Kolkhoz in Tashauzskiy Rayon, and numerous other farms to disseminate progressive practices in organizing the use of equipment and petroleum products at the kolkhozes. Machine yards and standard petroleum storage depots with up-to-date refueling equipment have been built at these farms. Mechanized, enclosed equipment refueling has been organized. The petroleum storage depots have firefighting equipment and devices in case of fire.

As a result of the organizational-technical steps that are being taken, the expenditure of diesel fuel per standard hectare is declining year after year. In 1979, for example, the expenditure of diesel future was 8.07 kilograms per standard hectare at the kolkhozes and 8 kilograms at the sovkhozes compared to a norm of 8.2 kilograms. For comparison, expenditure of diesel fuel has dropped 430 grams at the kolkhozes since 1976 and 700 grams at the sovkhozes.

Nonetheless, it must be observed that the level of use, storage, and transportation of petroleum products achieved at the kolkhozes and sovkhozes of the republic as a whole still does not meet contemporary requirements.

Year after year the farms fail to fulfill their plans for construction of petroleum storage facilities and putting them into operation. In the period 1977-1980 60 petroleum depots were supposed to be put into operation; in fact 26 were turned over for use, which is 43 percent. Thirty-five percent of the kolkhozes and sovkhozes today have standard petroleum depots, and just 21 percent of the sovkhozes alone.

Many kolkhozes and sovkhozes permit significant violations of procedures for storing and using petroleum products, causing substantial losses of fuel and lubricants. Inspections made by agencies of the republic Gossel'tekhnadzor [State Inspectorate for Supervision of the Technical Condition of the Machines and Tractors of the Ministry of Agriculture] and the procurator's office revealed that petroleum storage tanks are standing without foundations, have not been painted in sun-protective colors, do not have tightly sealed hatches, and have breather valves that do not work or none at all. The tanks and other petroleum containers are not protected. Petroleum products are lost as the result of leaks in taps, fuel lines, fuel distribution pumps, and pumping equipment. At many farms petroleum products are used for improper purposes or sold to outside organizations.

In 1979 the kolkhozes and sovkhozes of Vekil'-Bazarskiy Rayon of Maryyskaya Oblast permitted overexpenditures of 52.5 tons of diesel fuel, 27 tons of lubricating oil, and 208 tons of gasoline. The farms of Karakumskiy Rayon of the same oblast used 2,740 tons of diesel fuel, 90 tons of diesel oil, and 690 tons of gasoline beyond the plan.

At the Turkmenistan Kolkhoz in Tel'manskiy Rayon of Tashauzskaya Oblast 13 vehicles were checked and showed an overexpenditure of 4,340 kilograms of gasoline. In Chardzhouskaya Oblast 26 vehicles were checked at the Tezedurmush, imeni Lenin, and Leninizm kolkhozes of Karabekaul'skiy Rayon and found to have used nine tons of gasoline too much. The Kommunizm Kolkhoz in Kunya-Urgenchskiy Rayon of Tashauzskaya Oblast sold 51 tons of gasoline to motor pool No 11 and the Kolkhoz imeni Gagarin of the same rayon sold them 50 tons.

Sales and deliveries of petroleum products to outside organizations occurred at the Sotsializm Kolkhoz in Ashkhabadskiy Rayon, the Kizyl Baydak Kolkhoz of Dargan-Atinskiy Rayon in Chardzhouskaya Oblast, and the Sovkhoz imeni Kuybyshev in Krasnovodskiy Rayon.

The inspections showed that the principal causes of overexpenditure of fuel and lubricants are the fact that the farms do not park all motor vehicles and tractors in garages and machine yards after completion of work, speedometers are out of order on most vehicles, records of actual vehicle work are not kept, and fuel is written off based on actual expenditure.

There are numerous problems at the Leningrad, Ak-Altyn, and Iskra kolkhozes in Oktyabr'skiy Rayon of Tashauzskaya Oblast. Refueling is done by buckets, which leads to losses of petroleum products. The fuel storage tanks, in violation of regulations, are not mounted on foundations or painted in light colors. Furthermore, they do not have breather valves and water-dirt release plugs, and there are leaks in the fuel lines.

There are cases where farms receiving petroleum products in railroad tank cars on a centralized basis do not fully empty them. For example, the 40 Let TSSR Kolkhoz in Ashkhabadskiy Rayon failed to remove about five tons of diesel fuel from a car this year. The tank car was sent to the steaming station in Krasnovodsk, where the petroleum inspectorate discovered the violation.

Agencies of Turkmen SSR Gossel'tekhnadzor inspected 444 farms and found: 31.5 percent of the storage tanks were not installed on foundations; 31 percent were not painted in light colors; 38 percent did not have breather valves; 15 percent of the tanks did not have water-dirt release plugs; the tanks were not calibrated; many of them were not tightly sealed and fuel was leaking.

For permitting the fuel losses 158 farm management employees had 5,035 rubles withheld from their pay.

The careless, and in many cases criminally negligent, attitude toward storage and use of petroleum products at many farms in the republic is a result of the low level of monitoring and leadership by oblast and rayon agricultural administrations, agencies of Gossel'tekhnadzor, and the kolkhoz and sovkhoz managers.

The managers of farms and agricultural agencies should remember that correct and economical use of fuel and lubricants is a major national economic challenge.

Conservation of petroleum products depends on many factors. It depends on the technical condition of vehicles; leaks during transportation, storage, and refueling; evaporation during storage; the level of filling of the tanks, the temperature of the fuel stored; the condition of the ground on which work is done during repair and technical servicing, and many other factors. For example, improper adjustment of one diesel engine fuel injector increases fuel expenditure 15-20 percent. Lowering the temperature of the cooling fluid 30-40 degrees C increases fuel expenditure by 5-10 percent because of a lower percentage of combustion. When the angle of initiation of fuel delivery is deflected by 3-5 degrees, specific fuel expenditure rises 4-8 percent.

Fuel use by tractors depends largely on the technical condition of other mechanisms and system which directly or indirectly affect engine work. For example, an incrustation 1.1 millimeters thick on the walls of the cooling system increases fuel expenditure 7-8 percent. Wear of 0.01 millimeters on the cylinder-piston group increases fuel expenditure by 0.5 percent. When the working elements of plows and cultivators become dulled the drag is increased which reduces productivity and increases fuel expenditure by 15-25 percent.

It is essential to maintain the units and assemblies of tractors, combines, and other agricultural machinery in good technical condition at all times in order to conserve fuel when they are used.

The principal causes of fuel loss by leakage are the poor technical condition of equipment at petroleum storage depots, violations of operating rules, and a low level of technical sophistication in service personnel.

The technical condition of petroleum storage equipment must be checked daily to avoid fuel losses by leakage. To accomplish this each farm must introduce a planned system of preventive technical maintenance of petroleum equipment.

The servicing of petroleum storage depots at kolkhozes and sovkhozes by specialized brigades from Sel'khoztekhnika deserves attention. They take on full responsibility for technical servicing and repair of petroleum storage equipment based on contracts with the farms.

Given the hot climate of our republic there is a problem of preventing fuel (especially gasoline) losses caused by evaporation. Losses occur because tanks are not sealed (lack of gaskets on hatches, improperly fitted roofs, improperly sealed breather valves or no breather valves at all, and so on) depending on the level of filling of the tank and on the color of the tank.

It has been shown that gasoline losses from evaporation in tanks that are 20 percent filled are 32 times greater than in tanks which are 90 percent filled. Therefore, when choosing the size of a petroleum storage depot, it must be kept in mind that it is better to have one large tank to store a certain amount of fuel than to have several smaller ones.

Annual losses of gasoline in unpainted, unscreened 25 cubic meter tanks without petroleum fittings, gaskets, and breather valves are about 3.6 tons. Annual losses are just 100 kilograms in 25 cubic meter tanks which are painted, equipped with type DK breather valves, but without an airtight gas space or painted tanks that are fully sealed and equipped with type DK-M breather valves.

The color of the tank and the temperature of the fuel being stored have a significant effect on fuel evaporation. According to calculations based on figures from GOSNITI [State All-Union Scientific Research Technological Institute for Repair and Operation of Vehicles and Tractors], when gasoline is stored at 11 degrees C 850 kilograms a year evaporate, whereas at 21 degrees C evaporation is 3,800 kilograms and at 25 degrees C it is 6,500 kilograms. Fluctuation in the temperature of the gas space is significantly reduced when the tanks are painted light colors that have better reflective capacity. A white color reflects the sun best. According to experimental figures, losses of gasoline stored in surface tanks painted white is half of the losses of aluminum-colored tanks. Moreover, the white paint lasts 3-4 years, while aluminum lasts only 1.5-2 years.

Conservation of motor and transmission oils is becoming increasingly important in agriculture. The amount of such oils used increases each year because in the last decade tractors, combines, and most other agricultural machines have been equipped with hydraulic systems, hydraulic drive, hydraulic actuators, and other aggregates for which the use of motor oil is recommended to insure normal working conditions for machine operators and raise the productivity of tractor-machine units.

The principal ways to reduce the use of motor oils should include reducing expenditures for periodic replacement, for refilling (when oil is burned and leaks), and for technical maintenance, preventing losses and spills when filling the lubrication and hydraulic systems, and preventing losses during storage and transportation. For example, losses of motor oil reach 4.56 percent when tractors are filled using a measuring cup or bucket (the most widespread method of filling at many kolkhozes and sovkhozes), but when tractors are filled by a mechanized unit or oil distribution pump losses are just 0.20 percent.

So one of the chief reserves for reducing use of and conserving petroleum products in the republic's agriculture is organizing mechanized, enclosed refueling and lubrication of tractors and other self-propelled machines.

On 28 April 1967 a decree of the USSR Soviet of Ministers aimed at bolstering material incentive to use petroleum products economically recommended the establishment of bonuses for conservation of fuel and lubricants compared to established expenditure norms on the condition that agrotechnical requirements for the quality of tractor work are met. The bonuses are in the following amounts:

a. a tractor operator is paid 35 percent of the value of the fuel and lubricants he has conserved;

b. the brigade leader of a tractor-field work (tractor, or multipurpose) brigade is paid seven percent of the value of petroleum products conserved in the brigade and a mechanic, assistant brigade leader, or refueling worker receives three percent;

c. a master mechanic is paid five percent of the value of fuel and lubricants conserved in the brigades he serves;

d. the manager of the petroleum system is paid three percent of the value of petroleum products conserved within the entire system and workers of repair shops engaged in adjustment of fuel equipment are paid five percent.

In cases of unjustified overexpenditure of petroleum products through the fault of employees, the following amounts are withheld from their pay: 50 percent of the value of overexpended fuel and lubricants for tractor operators; within a brigade, for the brigade leader — 10 percent, for mechanics and assistant brigade leaders in charge of equipment — five percent, and for refueling workers — five percent of the value of petroleum products overexpended in the brigade; for master mechanic-adjusters 10 percent of the value of fuel and lubricants overexpended in the brigades serviced.

If the overexpenditure of petroleum products is not the fault of the employees, up to 30 percent of the amount compared to established norms can be written off by the farm manager. Overexpenditure of petroleum products beyond 30 percent compared to established norms which occurred because of work under difficult conditions and not through the fault of employees is written off by the managers of the higher-ranking organizations (rayon administration of agriculture, sovkhoz trust, and the like) after documents are submitted by a commission consisting of farm specialists.

Where tractor work is done in violation of established agrotechnical requirements, 50 percent of the value of the fuel and lubricant used for work done poorly is withheld from the pay of the tractor operator and 10 percent from the pay of the brigade leader of the tractor-field work (tractor, or multipurpose) brigade.

Motor vehicle transportation employees are given material incentive on the basis of the 14 December 1972 decree of the USSR Council of Ministers' State Committee for Questions of Labor and Wages and the Secretariat of the AUCCTU.

The following bonuses are paid for conservation of petroleum products compared to established norms: for vehicle drivers — up to 25 percent of the gasoline saved and up to 12 percent of the value of diesel fuel saved; for employees engaged in adjustment of engines, assemblies of the fuel supply system, and electrical equipment — up to three percent of the value of the fuel conserved in all vehicles assigned to them (taking account of overexpenditure of fuel by certain ones); for engineering-technical personnel directly involved in management of work to adjust engines, assemblies of the fuel supply system, and electrical equipment and accounting for fuel expenditure by motor vehicles — up to two percent of the value of the fuel conserved by all vehicles (taking account of overexpenditure of fuel by some vehicles).

The list of worker occupations and engineering-technical positions subject to bonuses for conservation of petroleum products is established by the farm manager with the consent of the trade union organization.

When overexpenditure of petroleum products beyond established norms occurs through the fault of vehicle drivers, up to 60 percent of the value of overexpended gasoline and 35 percent of the value of overexpended diesel fuel is withheld from their pay.

Kolkhoz and sovkhoz managers and oblast and rayon agricultural agencies must take all possible steps to reduce the use of petroleum products by improving the norm system and record-keeping, introducing improved forms of equipment use, introducing specialized technical servicing of machinery and petroleum storage equipment, building up the material-technical base of the petroleum storage system, intensifying checks on the use of petroleum products, and preventing losses of these products during storage, receiving, and transportation. We must completely eliminate primitive petroleum storage facilities in the brigades and concentrate them in the central farm areas. We must broaden the use of enclosed mechanized refueling of tractors and other self-propelled machinery by traveling refueling equipment.

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ENERGY CONSERVATION

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ELECTRICAL EQUIPMENT SECTOR TAKES STEPS TO IMPROVE PRODUCT QUALITY

Moscow STANDARTY I KACHESTVO in Russian No 2, Feb 81 pp 36-38

[Article by A. S. Dzhanoyan, chief of the Technical Administration of the Ministry of Electrical Equipment Industry: "The Role of Standardization in Accelerating Scientific-Technical Progress"]

[Text] The electrical equipment industry makes a significant contribution to the development of many sectors of the economy by producing highly efficient electrical equipment.

Research and development done during the current five-year plan aimed above all at increasing unit capacities, improving the specific characteristics of articles and reducing their material-intensiveness, creating automated articles and complexes, and introducing progressive industrial processes and equipment. In developing and incorporating the production of new articles attention was focused on those items designated for sectors that have the greatest impact on bolstering the country's economy and raising the standard of living of the people.

The sector made a significant contribution to the development of the domestic power system. Generators with capacities of 200 and 300 megawatts were replaced by turbogenerators with capacities of 500 and 800 megawatts. Turbogenerators with capacities of 1,000 megawatts were built for atomic power plants. Electrical equipment for hydro engineering installations is being improved. For example, hydrogenerators with capacities of 640,000 megawatts have been manufactured for the Sayano-Shushenskaya Hydroelectric Power Plant. Electrical equipment has been developed, incorporated in production, and introduced in practice to transmit electricity at superhigh voltage, 750 kilovolts. A complex of equipment has been developed to transmit electricity at 1,150 kilovolts of AC current and 1,500 kilovolts of DC current.

The petroleum and gas industry are receiving progressive electrical equipment. Thus, fundamentally new types of electrical equipment have been devised for drilling rigs used in off-shore drilling as well as electrical drills with new hydraulic protection. Production of new types of highly efficient electrical equipment used in the construction of petroleum and gas pipelines has begun, including electrical equipment for automatic welding of the fixed (non-turning) joints of large-diameter pipes under field conditions.

For the coal industry a set of blast-proof electrical equipment designed for using higher voltage is being produced, special electrical equipment is being built for work in mines with steeply dipping layers, and sets of new electrical equipment are being developed for open-pit and walking excavators.

A great deal of work has been done to supply new types of electrical equipment to metallurgical industry, machine tool building, railroad transportation, agriculture, and the services sphere. Our industry is producing new types of semiconductor instruments and transformers, economical light sources, cable, and other types of electrical engineering equipment that have a significant economic impact in many sectors of the national economy.

A significant share of the work on new technology has been carried out within the framework of comprehensive scientific-technical programs and programs to solve key national and sectorial scientific-technical problems. In the 10th Five-Year Plan the enterprises and organizations of our sector participated in many multifaceted programs approved by the State Committee for Science and Technology.

The use of target program planning techniques made it possible, for example, to raise the level of asynchronous AC electric motors significantly and to design and begin production, in a very short time, of a uniform series of motors with a broad power range (from 0.1 to 400 kilovolts) and improve weight, technological, and operating indicators. This series was awarded the State Prize.

During the 10th Five-Year Plan the Ministry of Electrical Equipment Industry carried out a large program of organizational, technical, and economic measures to improve the mechanism of sector management and raise the level and stability of manufacturing technology for its output. Thus, we developed and introduced new organizational forms of interlinking science and production, improved methods of planning the development of science and technology on the basis of schedule-orders, and efficient systems for planning and economic stimulation for the introduction of new technology and raising the quality of the output produced. A number of steps were taken toward technical re-equipping of production and broad introduction of progressive technology. As a result, the level of output in the highest quality category reached 47.2 percent of the total volume of commodity output (in 1976 it was 35.3 percent), while output in the second quality category declined to one percent (compared to 2.6 percent in 1976).

Improving the system for accelerating scientific-technical progress in the sector is inseparably linked to broad use of standardization in all stages and phases of the development and production of articles and insuring the quality of the products produced. The system of centralized planning, financing, and acceptance of standardization projects now adopted in the sector has promoted the development of standardization and improvement in its effectiveness. The head organization for standardization, VNIIstandartelektro [possibly All-Union Scientific Research Institute of Standardization in the Electrical Equipment Industry] plays an important role in this system.

The systems approach to shaping the array of normative and technical documents, which today includes 1,200 state standards, 2,050 sectorial standards, and 11,000 technical specifications, insured effective use of this data as the normative-technical base for accelerating scientific-technical progress and controlling the quality of output. This array encompasses all the primary types of electrical equipment output, organizational and methodological norms, and rules for comprehensive control of the technical level and quality of output in all stages and phases of its life cycle.

With respect to scientific-technical level, the existing standards and technical specifications for output generally meet the requirements of the national economy and the population as well as the requirements of CEMA standards and, generally speaking, international standards. They are systematically checked and, when necessary, updated.

Work being done in the sector to limit unjustified diversity in the assortment of electrical equipment in production promotes acceleration of scientific-technical progress. One hundred-thirty standards for parametric series, 150 standards for the designs and dimensions of parts and assembly components, and about 100 standards for type-size series of articles serve this purpose. Standardization plans establish assignments for raising the level of standardization of different types of output and are used as the basis for writing technical specifications for the development of specific articles.

During the 10th Five-Year Plan there was accelerated development of sectorial standardization in the area of technology, which is one of the decisive factors in assuring the necessary level of product quality.

More than 800 sectorial standards worked out within the framework of the uniform sectorial system of technological preparations for production (OYeSTPP) cover the technology of producing 22 groups of electrical equipment that are manufactured in series, large-series, and mass production. These standards regulate standard technological processes, the requirements for technological suitability of articles designed, and requirements for technological equipment. These standards define the basic principles of organization of technological preparations for production and the stages and sequence of performance of this work. They assign the levels of use of materials, labor, and financial resources and the technical levels of production at the enterprises that produce output. They regulate the procedure and rules for evaluating the technological feasibility of articles designed and development of standards for basic indicators of technological suitability.

The introduction of the sectorial uniform system of technological support for production in the electrical equipment industry made it possible to solve a number of important problems of raising the efficiency of production and quality of output. For example, there were significant increases in the levels of use of standard technological processes (to 40 percent), standard adjustable equipment (to 12 percent), and standard adjustable fittings (to 40 percent).

One of the basic requirements of the process of developing and putting output into production is insuring high quality preparation of the articles being turned over for incorporation in industrial production. The mechanism for controlling this process is regulated by the sectorial standard, in effect since 1971, which defined the procedure for conducting scientific research and experimental design work and incorporating articles in production.

Considering the specific characteristics of the sector, the standard establishes interrelated stages of work, criteria for determining when they end, types of normative-technical and other documents produced during the design process, and relations between the developing enterprise and the manufacturing enterprise. The introduction of this standard led to an increase in the technical level and quality of new articles and good preparation of articles in the experimental design stage while making it impossible to turn articles over for industrial incorporation before they are adequately prepared for series production.

The sector is continuing work in this important direction with due regard for the requirements of the state standards of the uniform system for development of output and delivering it to production. At the present time work is going forward to achieve excellent final results from development by switching the center of gravity of design and technological processing of articles to their early planning stages so that during manufacture of the set-up series at the manufacturing enterprise it will only be necessary to check the readiness of the manufacturing plant for series production of articles on the assigned technical level.

Compliance with the requirements of the standards of the system for development of output and delivering it to production is assured by the head organizations for standardization, which conduct centralized scientific-technical expert examination of all technical specifications for new development and of all materials on the readiness of experimental design projects and set-up series of new articles for submission to the receiving commission. Special attention here is devoted to examination of the technical specifications and cards indicating the technical level and quality of the output. All drafts of standards being developed in the sector are also subject to examination by the centralized commission.

On the other hand, to organize procedures for withdrawing products in the second quality category from production in the sectors, a standard was developed that regulates the procedures for preparing proposals on withdrawing obsolete articles from production and reconciling them with interested organizations. This standard will be put into effect in 1981. It establishes types of documents that are developed in this situation and the procedures for taking steps to carry out the agreed-upon withdrawal of an obsolete article from production.

Standardization also encompasses the processes of planning the development of science and technology and working out programs for integrated standardization. For example, since 1977 the sector has had a standard that regulates procedures for shaping the plans of development of science and technology at different management levels, the subordination structure of different plans, the composition and types of planning documents, and reports on fulfillment of plan assignments. The standard provides a mechanism for the development, ratification, and implementation of schedule-orders which define the entire cycle of developing and incorporating production of articles and the stages, volume, and sources of financing for those who do the work. The introduction of the standard promoted a rise in the level of planning work and clear-cut regulation of planning assignments and responsibilities for their performance at each level of management.

At the present time the sector is working to further refine the planning process and revise the principles of this standard appropriately on the basis of the requirements of the decree of the CPSU Central Committee and USSR Council of Ministers entitled "Improving Planning and Strengthening the Influence of the Economic Mechanism on Raising Production Efficiency and Work Quality." To be specific, general statutes on planning are being put in concrete form; planning and report documents are being refined to increase the accountability of performers, and the decision-making process for certain functions of managing the process of shaping plans is being moved to a lower level.

The target program method has been made the foundation of planning work on standardization. A special sectorial standard regulates procedures for the development, reconciliation, and ratification of programs for integrated standardization and techniques for defining (on the basis of the systems approach) sets of interrelated standards of different types and categories necessary and sufficient to insure efficient production of high-quality output. Guided by the requirements of this standard programs of integrated standardization have been developed for all types of electrical equipment to be carried out in the 10th and 11th five-year plans.

These interrelated programs insure the establishment of a normative-technical base for solving the problems envisioned by the integrated scientific-technical programs and programs to solve key scientific-technical problems. Thus, the special program ratified by a joint decision of the State Committee for Standards and the Ministry of Electrical Equipment Industry envisions a rise in the level of methodological support for production in enterprises of the sector in the 11th Five-Year Plan.

Concentrating work on formulation of plans for the development of science and technology at the head organization on standardization insures efficient use of the potential of standardization to solve national economic problems in the sector.

Standardization is being used extensively to improve the mechanism for control of the quality of output, in particular the system of certifying output, technological processes, and the level of production. Thus, the set of sectorial standards establishes the basic principles of the system to control the quality of output at the sector, subsector, association, and enterprise levels, requirements for the functioning of all elements of them, and methods of evaluating the technical level of specific types of electrical equipment.

The sectorial system for quality control of output is closely linked to the integrated systems for quality control of output that function at enterprises of the sector. Thanks to a great deal of organizational and methodological work, practically all enterprises of the sector have registered introduction of integrated systems for quality control of output at territorial agencies of the State Committee for Standards. It should be noted specially that all our sector's enterprises in Moscow have introduced the system. Moreover, they are taking an active part in formulations of the Moscow city system for quality control of output. Many enterprises of the sector have begun automating the processes of controlling the quality of output.

A distinguishing feature of the system of sectorial certification of output is that it provides a strict relationship between evaluation of the quality of output and evaluation of the level of technology of its manufacture. Thus, products may be submitted for certification in the highest quality category only if the level of technology and organization of production have been certified no lower than the first category. This provides incentive not only to raise the quality of articles, but also to insure stability in the production process. The basic principles of the system for certification of the level of technology, the certification procedure, and the methods of evaluation used are controlled by a sectorial standard.

Among the important measures to improve quality control we should include the introduction of planning the production of output in the highest quality category by groups of specific types of articles.

Insuring high quality articles requires testing facilities. For this reason the sector is working to establish a widely distributed network of testing depots, based on the territorial-nomenclature principle, and testing centers. State testing centers are being set up at the head scientific research institutes for types of output.

A network of laboratories to monitor the quality of output and the introduction of and compliance with standards has been organized to strengthen ministry supervision of the quality of finished output and compliance with the requirements of the standards. Representatives of these laboratories carry on direct, constant monitoring and preventive work to avert defective goods and complaints in the enterprises assigned to them. Representatives of the territorial laboratories have been given broad rights, going as far as prohibiting the acceptance of output and shipment to customers in those cases where the output does not meet the requirements of normative-technical documents. The new system of monitoring output quality has already covered up to 33 percent of the enterprises of the sector located in Moscow, Leningrad, Riga, Tashkent, Belorussia, and other republics and oblast centers. The experience with them has provided positive results: indicators of output quality have improved, the number of complaints has declined, and losses from defective goods have gone down.

In conclusion we must observe that thanks to the work done in the 10th Five-Year Plan to improve the economic mechanism and manage the process of accelerating scientific-technical progress, favorable conditions have been established in the sector to successfully meet the complex and important problems of further raising production efficiency and the quality of output.

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OIL INDUSTRY PLANS FOR 11TH FIVE-YEAR PLAN

Moscow EKONOMIKA NEFTYANOY PROMYSHLENNOSTI in Russian No 2, 1981 pp 2-6

[Article: "Tasks of the Petroleum Industry During the 11th Five-Year Plan]

[Text] The concluding 10th Five-Year Plan entered the books of the building of communism as one of truly shock labor, creativity and enthusiasm of the Soviet people. New high positions were achieved by the Soviet national economy. Our party and people are meeting the 26th CPSU Congress in monolithic unity.

One-fifth of the world's industrial production is now attributed to the Soviet Union; it occupies first place in the world in steel and petroleum production.

As noted at the October (1980) Plenum of the CPSU Central Committee, concern about the people's welfare is the chief concern of our party. Public consumer funds compiled an enormous sum during this five-year plan--527 billion rubles.

The significance of the petroleum industry is great in providing continuous growth of the Soviet people's standard of living. A new important step was made during the 10th Five-Year Plan in development of the petroleum industry.

The increase of oil production during five years comprised a very significant value throughout the enterprises now included in the Minnefteprom [Ministry of the Petroleum Industry] system.

The indicated growth was provided by overfulfillment of the physical volumes of work above the tasks of the five-year plan.

Thus, 6.2 million meters of test drilling was carried out and an additional 2,700 oil wells were put into operation above the plan. Compared to 1975, the volume of test drilling for oil doubled in 1980 while the volume of capital investments increased 1.8-fold.

A number of important programs was implemented in the sector during the 10th Five-Year Plan and primarily those for development of the country's chief oil-producing base--the Western Siberian oil and gas complex, being developed according to the decisions of the 25th CPSU Congress.

Oil production throughout the Western Siberian complex increased 2.1-fold over 5 years. The vigorous development of this region was provided with recruitment of all the potential capabilities of the sector. The drilling enterprises of a number of oil-producing regions of the country were reoriented toward drilling the fields of Western Siberia.

Exploitation of the oil fields was also carried out in an accelerated manner in the Komi ASSR, the Udmurtskaya ASSR and the Georgian SSR.

Purposeful measures on formation of new collectives, development of bases, technical equipping of petroleum enterprises and provision of the most efficient process of operation management were implemented in these regions.

An enormous complex of measures was implemented in the old oil-producing regions where the tasks on major overhaul and routine maintenance of wells and on the volume of geological and engineering measures were much overfulfilled under complex conditions of high inundation of production and significant exploitation of basic oil reserves, which ensured a reduction of the rates of decrease of oil production.

The oil workers sought out opportunities everywhere to increase the volume of work to provide additional oil production. This permitted 14 oil regions to complete the tasks of the five-year plan ahead of schedule.

Technical re-equipping of the sector was carried out,and complex automation of production processes and introduction of automated control systems in the fields were accomplished during the 10th Five-Year Plan.

Intensive flooding systems--block, three-level and area, that made it possible to exploit the fields with intensive rate of sampling--achieved industrial introduction during exploitation of the fields.

Introduction of these systems made it possible to accelerate the rates of development of the fields.

The maximum possible rates of development were achieved in a number of the country's fields during the 10th Five-Year Plan.

Enormous work was carried out to increase the volumes of liquid production and of water pumping--these volumes were increased 1.5-fold.

Newly discovered fields in old oil regions were put into exploitation at accelerated rates.

Implementation of the indicated measures made it possible to increase oil production in five growing regions and also to stabilize or reduce the rates of production decrease in old oil regions.

An important problem accomplished during the 10th Five-Year Plan is an increase of the oil yield of beds. Two specialized associations were created in the sector. Thermal methods of affecting the oil bed and also an entire complex of chemical methods of increasing oil yield were used in a number of fields.

Development of a clearly operating economic mechanism that provides stimulation of technical progress contributed to implementation of the program of work to increase the oil yield of beds. This mechanism includes analysis of measures to increase oil yield according to the national economic (rather than the sector) effect and also the use of a created special fund to increase the oil yield of beds, due to which increased expenditures related to introduction of new production processes are repaid. The fund for increasing the oil yield of beds is utilized both for measures to develop new methods of increasing oil yield and to expand the scale of their use.

A considerable increase of the fund for increasing the oil yield of beds is provided during the 11th Five-Year Plan. Compensation of objectively inevitable increased outlays for industrial development of new techniques of exploiting oil fields at the expense of this fund neutralizes the effect of factors that delay improvement of it.

Development of the petroleum industry during the 10th Five-Year Plan largely contributed to an increase of the economic might of our country.

Special attention must be devoted during the 11th Five-Year Plan to acceleration of technical progress, improvement of technical and economic indicators, strengthening of state planning discipline and universal improvement of work quality in all sections of the sector.

A number of measures is now being implemented in the sector to improve the state of exploitation of oil fields and to stabilize the situation with oil production in individual regions.

The 11th Five-Year Plan is faced with the task of utilizing to the maximum the country's enormous developed economic potential and advantages of a planned socialist economy, to place additional reserves at the service of the national economy and to improve the mechanism of control and management by sequentially overcoming existing omissions and deficiencies.

An increase in the rates of development of nuclear power engineering, a rapid increase of natural gas production and a reduction of the fraction of oil used at electric power plants are provided in the "Main trends for economic and social development of the USSR for the period 1981-1985 and for the period up to 1990" to ensure a more stable supply of fuel and energy to the national economy.

The most urgent task of the sector is to organize work and to create the necessary conditions to support the tasks of the 1981 plan.

The 1981 plan provides for rational intensification of exploitation of every oil field, further improvement of exploitation by introduction of various modifications of intraprofile flooding, accelerated extraction of liquid, bringing low-productive beds into exploitation and introduction of new methods of increasing the oil yield of beds.

The volumes of pumping water into productive beds will increase by 9.2 percent compared to 1980.

Oil production from fields with artificial maintenance of bed pressures will be brought up to 90.8 percent. A significant increase of liquid extraction from fields is provided compared to 1980.

Utilization of the stock of wells should be improved in 1981. It is planned to put into operation 20 percent more non-operating wells than in 1980. The more efficient gas-lift method of exploitation will achieve further development.

An extensive program to develop new oil-producing capacities will be implemented in 1981.

However, all these measures only compensate in the main part for the drop in oil production by the leading stock of wells with regard to the natural process of depletion of reserves for a number of fields. The increase of oil production will reach five each in 1981 among 26 oil-producing regions throughout the sector as a whole. A significant increase in the volumes of work is planned in these regions.

An extensive program of work is planned for old regions that have been taken out of production. The volume of test drilling is planned at 18 percent more here than in 1980.

The main increase in the volumes of test drilling--70 percent of the total increase throughout Minnefteprom--will occur in Western Siberia. An increase in the volumes of drilling by 90 percent should be provided by an increase of labor productivity, an increase of exploitation per drilling brigade and by an increase of the commercial rate of drilling.

An increase of the commercial rate by 5 percent is being provided due to introduction of the measures of scientific and technical progress and improvement in organization of labor and production. The length of construction of one well (by providing continuous work at all stages of well construction) should be reduced by 8 percent.

The volume of geological and engineering measures directed toward intensification of the existing stock of wells should increase 1.2-fold.

Extensive introduction in optimization of the work of the mechanized stock of wells using computers is planned to stabilize and reduce the rates of decrease of oil production in old regions.

Introduction of gas-lift equipment complexes, installations of submersible centrifugal electric pumps, sucker-rod pumps with bushingless cylinders and other highly effective measures is planned in oil production. Special attention will be devoted in the 1981 plan to problems of increasing the oil yield of beds.

Introduction of measures is planned for pumping water with surfactant solutions, polymers, steam and high-pressure gas, sulfuric acid and hot water into oil beds.

The use of the advances of scientific and technical progress, being one of the decisive trends for intensification of production, has a direct effect on the technical and economic indicators of the sector.

The most important measure to improve the indicators of the sector is to improve the utilization of casing-head gas resources by 5.0 percent compared to 1980.

A very intensive plan has been confirmed for the sector in production expenses. Fulfillment of it requires extensive organizing and engineering work on conservation of material, energy and labor expenditures.

We should never forget that socialism is a society in which the principle of rational and economic use of all material, financial and labor resources operates.

The maximum use of available labor resources is one of the most serious problems of the petroleum industry. Proceeding from the general situation with labor resources, the petroleum industry has decreased in the growth of personnel compared to the planned increase of previous years. The use of labor resources should be carefully monitored in this regard. The past practice of over-recruitment of personnel is impermissible in the future. Economic action should be implemented in this direction by using the directive norms of personnel, wage funds and material incentives funds.

The norm of labor expenditures for maintenance of a single well was established for 1981 with a reduction by 4.1 percent.

The achieved increase of labor productivity during the 10th Five-Year Plan was provided by reducing specific labor expenditures.

The oil-producing associations of Western Siberia, the Komi ASSR, the Bashkirskoye ASSR, Tatarskoye ASSR and Udmurtskaya ASSR and Stavropol'skiy Kray, where specific labor expenditures were reduced significantly over 5 years, worked productively in this direction. However, specific expenditures are still at a level above the average for the sector in 16 petroleum regions. This indicates the presence of significant reserves for conservation of live labor in the sector. The entire economic mechanism for ensuring a further reduction of labor expenditures must be utilized more widely.

We must also develop and use the progressive indicator of wages for maintenance of a single well in planning. This norm, being a continuation of the norm of specific labor expenditures, should provide more economical consumption of labor resources in the sector.

The year 1981 is the first year of the new five-year plan and fulfillment of the tasks of the plan by the sector will serve as a required beginning for fulfillment of the 11th Five-Year Plan--one of a growth in the level of the people's standard of living and further strengthening of our country's might. The role and significance of the petroleum industry in this problem are exceptionally important.

Important tasks should be solved by the sector during the 11th Five-Year Plan.

A further increase of oil and gas condensate production should be provided.

To do this, during the five-year plan we must:

increase liquid production 1.5-fold;

increase the volume of pumping into productive beds by 45 percent;

increase the volume of operational drilling 2.2-fold;

increase the specific weight of mechanized production to 70 percent by the end of the five-year plan.

The role of technical progress will increase significantly during the new five-year plan, with considerable complication of the entire cycle of work on oil production.

Maximum possible intensification in exploitation of each oil and gas field, further improvement of the system of exploitation of fields, optimization of the network of wells, maximum increase of the efficiency of using the drilled stock of wells, bringing low-productive beds and water-oil and gas zones into exploitation, extensive introduction of the gas-lift method of oil production and introduction of new methods of increasing the oil yield of beds are provided by developments of the five-year plan.

A decisive role is being allocated to well-drilling in preparation of raw material resources and in an increase of oil and gas production.

Extensive work is being carried out in the field of improving drilling tools, pipes and drilling muds.

Along with acceleration of technical progress, attention should be concentrated in drilling on problems of improving the structure of management, reducing labor expenditures and increasing the efficiency of drilling operations.

Our urgent task in organization of drilling operations during the forthcoming five-year plan is to ensure a sharp reduction of labor expenditures in drilling and transport.

An experiment conducted on introduction of a complex brigade contract in drilling is of great interest in this direction. Introduction of this method during the 11th Five-Year Plan may yield a large saving.

An experimental measure now under way to resolve problems of well construction at a qualitatively new level: construction of wells, planning of drilling operations, material and technical support and financing of them for the completed well in complete accordance with the contract designs, should also be widely introduced during the new five-year plan.

The rates of drilling should increase by no less than 35 percent. The increase of rates in test drilling is provided at 35 percent by improving the organization of drilling operations; unproductive time expenditures in test drilling should be reduced by 52 percent and those in exploratory drilling should be reduced by 40 percent.

The length of construction of a single test well should be reduced by 17 percent.

The plan of scientific research work for 1981-1985 is oriented toward development of scientific potential in the petroleum industry which will provide purposeful scientific and technical development of all spheres of petroleum production.

Complete realization of the main trends of scientific and technical progress should provide a significant volume of oil production.

The specific number of industrial production personnel per well should be reduced by no less than 15 percent.

A further increase of the standard of living of workers of the petroleum industry is planned. The average monthly wage of workers and employees should be increased by improvement of the bonus system.

The management mechanism and organization of management of the national economy should correspond fully to the party's economic strategy.

A system of measures directed toward improvement of planning and improvement of the organizational structure of management, intensifying the role of economic levers and stimuli in the interests of accelerating scientific and technical progress and efficient use of resources to achieve high final results of production will be implemented during the 11th Five-Year Plan.

As emphasized at the October (1980) Plenum of the CPSU Central Committee, this important work should be waged with even greater persistence so as to complete the conversion of the economy to the rails of intensive development during the 1980s.

Significant work is being carried out at enterprises of the petroleum industry to fulfill the decree of the CPSU Central Committee and the USSR Council of Ministers "On improvement of planning and intensification of the effect of the economic mechanism on increasing production efficiency and work quality." A number of operations provided by the decree has been fulfilled and is at the stage of introduction. Thus, a complex system of production design and economic planning has been developed and introduced to increase the justification of planning calculations and to convert to compilation of reliably based five-year plans for each oil region. The quality of the economic part of the development plans should be increased to ensure the clear effect of this system.

A number of procedural documents--procedural regulations on sector planning, a method of evaluating the intensity of plans and sector forms of the certificate of an oil-producing association--has been developed and confirmed. A system of economic incentives of work to increase the degree of oil extraction from the interior has been developed and introduced.

Work is being carried out to improve the management mechanism. Improvement of the system of planning-estimate indicators that provide the establishment of such economic relationships between enterprises and associations in which local tasks of various sections are coordinated with general sector goals, is of essentially important significance.

The indicated system of indicators should be introduced throughout the sector as a whole in 1981.

A number of other decisions concerning the improvement of planning and financing of scientific research work and capital construction should also be fulfilled in 1981.

Successful fulfillment of this work will serve as the necessary contribution to implementation of the decisions of the October (1980) Plenum of the CPSU Central Committee and to further improvement of the sector economic mechanism and will contribute to development of a firm base for successful fulfillment of the plan of the starting year of the new five-year plan.

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